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Forest Insect & Disease Management

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DETECTION REPORT

BAGWORM ON WHITE PINE

SHAWNEE NATIONAL FOREST

1981

by

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Detection of Bagworm on White Pine

INTRODUCTION

The bagworm, Thyridopteryx ephemeraeformis (Haworth), is a defoliator of many tree species. It is a native insect that spreads slowly by dispersal of larvae from tree to tree. The female has no wings or legs and, therefore, deposits her eggs within her bag which hangs on the host tree. The bag is made up of tightly woven webbing mixed with particles of leaves and small twigs. The eggs overwinter in in these bags.

There are numerous parasites and diseases that keep bagworm populations at low levels. However, weather or some other environmental component occasionally permits an outbreak of the bagworm to develop. Most tree species such as cypress, juniper, or willow, can tolerate several successive years of heavy defoliation by bagworm. However, eastern white pine, Pinus strobus L., is vulnerable to bagworm defoliation. Sapling and seedling white pine die if completely defoliated; and about 20 bagworms can cause complete defoliation of a small tree in one season.

White pine defoliation and mortality was reported in April 1981 by foresters on the Vienna Ranger District. Bagworm was causing the damage in compartments 47 and 50. Because bagworm is common in the area, white pine is extensively planted, and any suppression project would need economy of scale, we decided to make a detection survey on the entire Forest. Trees less than 3 feet tall are rarely attacked by bagworm, and trees more than 15 feet tall are seldom damaged by bagworm.

OBJECTIVE

Forest Pest Management entomologists and technicians made a detection survey of selected white pine plantations on the Shawnee National Forest to determine which stands needed to be evaluated for possible suppression work.

METHODS

White pine plantations examined during this detection survey were selected from a list of all white pine plantations provided by the Forest. The list included only plantations having trees 3 feet to 15 feet tall or established since 1968. These plantations, which are on the Vienna, Murphysboro, and Elizabethtown Ranger Districts, are in 51 compartments and total 2686 acres (108 ha).

The survey was done in late September and early December 1981 when the bagworm was in it's egg stage.

The procedure was a random walk through one or more plantations in a compartment to find presence of bagworm and/or defoliation. Notes were kept on relative abundance and distribution of bagworm, defoliation, and tree mortality. If bagworms were found, they were checked for eggs or parasitism.

RESULTS

The crews surveyed 20 compartments on Elizabethtown R. D., 10 compartments on Vienna R.D., and 7 compartments on Murphysboro R.D.

No current outbreak of bagworm was detected. Tree mortality due to past bagworm attack was found on Elizabethtown R.D. compartments 47, 50, and 69. In each case, there were only a low number of scattered dead trees.

Bagworm populations were active in 1981 in the following compartments:

<u>District</u>	<u>Compartments</u>	<u>Degree of Infestation</u>
Elizabethtown	63,67,28,30,75	Light, scattered
Elizabethtown	69	Heavy, patchy
Murphysboro	5,7,49,50,53	Very light
Vienna	47	Light, scattered
Vienna	50	Heavy

Most of the bags were very small and contained dead larvae. Only one viable egg mass was found, and it was in Murphysboro on compartment 50.

There was a variety of parasites responsible for bagworm population collapse, but disease seemed most prevalent.

Defoliation in 1981 was negligible in all compartments surveyed.

DISCUSSION

All white pine on the Shawnee National Forest were planted. This portion of Illinois is south of the natural range of white pine. Plantations were established in old fields where there is severe competition from grasses and vines. The soils are clay-loams underlain by a fragipan at 6 inches to 24 inches. Surviving white pine has excellent growth after a three or four year establishment period, but initial survival is generally a very poor 20 percent or so. Replanting is often needed to obtain good stocking. Weed competition may be a major factor in survival and early growth of white pine.

White pine root decline, Verticicladiella procera, is found in many of the plantation. The fungus that causes the decline is found at the root collar where it shows as brown, wet wood. The disease kills the trees in about three years after invasion. Control is by removal of roots and stumps of infected trees to reduce the amount of inoculum. Success of such control measures is not assured.

CONCLUSIONS AND RECOMMENDATIONS

The bagworm population on the Shawnee National Forest is at endemic levels in 1981, poses no threat to white pine plantations in 1982, and requires no further evaluation until surveillance finds significant damage.

Weeds seem to be a major concern in most white pine plantations and should be evaluated for possible suppression.

White pine root decline needs to be controlled by removal of infected trees and roots. The biological and economic benefits of such an operation need to be evaluated.

3420 Detection

January 19, 1982

Bagworm Detection Survey

Forest Supervisor
Shawnee National Forest

Here are the results of our bagworm detection survey on the Forest. It seems that there was a general population collapse in most of the white pine plantations. The cause of the collapse could not be determined during the survey, but the large number of very small larvae that died indicated that a disease affected the bagworm population early in the season. Most of the bagworms that reached late larval stages were destroyed by parasites.

Current defoliation levels are extremely low and impact on the white pine is negligible.

We have cancelled our request for suppression funds in 1982 because bagworm control with B. t. is not needed.

JAMES B. HANSON
Field Representative
Forest Pest Management

Enclosure

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cc: Broomall, Ford, R-9